

Claims:

1. A connector for providing a connection between differential signal circuits, wherein each differential signal circuit includes a pair of differential signal conductors and two associated ground conductors, the connector comprising:
 - an electrically insulative housing, the housing having a plurality of terminal-receiving cavities disposed in said housing, the terminal-receiving cavities being disposed in a pattern within said housing for supporting electrically conductive terminals in at least first and second distinct rows within said housing;
 - a plurality of electrically conductive terminals supported in some of said terminal-receiving cavities of said housing, said terminals including at least one distinct terminal set that includes a pair of differential signal terminals and at least two associated ground reference terminals, the pair of differential signal terminals of the one terminal set being disposed in terminal-receiving cavities in said first row and the two ground reference terminals of the one terminal set being disposed in terminal-receiving cavities in said second row, said two ground reference terminals of said one terminal set being further interconnected to cooperatively define a common ground path for said pair of differential signal terminals; and,
 - said pair of differential signal terminals having an empty terminal-receiving cavity interposed between such that said differential signal terminals are spaced apart a first distance and said differential signal terminals are spaced apart from said two associated ground terminals a second distance, the first distance being greater than the second distance.
2. The connector of claim 1, wherein each of said terminal includes a contact portion, a tail portion and a body portion that interconnects the contact and tail portions together.
3. The connector of claim 2, wherein said body and tail portions of each terminal extend at an angle to said contact portions thereof.
4. The connector of claim 2, wherein said two ground reference terminals are interconnected by a bridging piece along their body portions

5. The connector of claim 4, wherein said bridging pieces are integrally formed as part of said two ground reference terminals.
6. The connector of claim 4, wherein said contact portions extend horizontally through said housing and said body portions extend vertically, said bridging pieces interconnecting said two ground reference terminals together along their vertical extent.
7. The connector of claim 1, further including a circuit board engaging said terminal tail portions.
8. The connector of claim 1, further including a second distinct terminal set that includes a second pair of differential signal terminals and at least two second associated ground reference terminals, the second pair of differential signal terminals of the one terminal set being disposed in terminal-receiving cavities in said second row and the two second ground reference terminals of the second terminal set being disposed in terminal-receiving cavities in said first row, said two ground reference terminals of said one terminal set being further interconnected together; and,
said second pair of differential signal terminals also having an empty terminal-receiving cavity interposed between them such that said second pair of differential signal terminals are spaced apart by a third distance and said second pair of differential signal terminals are spaced apart from said second two associated ground terminals a fourth distance, the third distance being greater than the fourth distance.
9. The connector of claim 8, wherein said first and third distances are equal.
10. The connector of claim 9, wherein said second and fourth distances are equal.
11. The connector of claim 8, wherein said plurality of terminals further includes first and second power terminals, the first power terminal being disposed in said first row adjacent to said two associated ground reference terminals of said one terminal set, the second power terminal being disposed in said second row adjacent said two associated ground reference terminals of said second terminal set.

12. The connector of claim 11, wherein said first and second power terminals are respectively disposed in said first and second rows in an offset manner so that an imaginary line drawn through the first and second power terminals extends at an angle across said first and second rows.
13. The connector of claim 8, wherein said plurality of terminals further includes first and second additional ground terminals power terminals, the first additional ground terminal being disposed in said first row adjacent to said two associated ground reference terminals of said one terminal set, the second additional ground terminal being disposed in said second row adjacent said two associated ground reference terminals of said second terminal set.
14. The connector of claim 13, wherein said first and second additional ground terminals are respectively disposed in said first and second rows in an offset manner so that an imaginary line drawn through the first and second power terminals extends at an angle across said first and second rows.
15. A contact arrangement for a differential signal connector having an insulative housing and a plurality of conductive terminals supported in the housing, each of the terminals including a t least opposing contact and tail portions, the contact portions contacting opposing terminals of a mating connector, the arrangement comprising:

the terminals defining at least a first differential signal channel that includes a first pair of differential signal terminal and a first pair of associated ground terminals, the first differential signal set terminals being disposed in first and second rows in said housing, the first row including said first pair of differential signal terminals and said second row including said first pair of associated ground terminals, said first pair of associated ground terminals being disposed in said second row adjacent each other and spaced apart from each other by a first distance, said first pair of differential signal terminals being disposed in said first row adjacent each other but spaced apart from each other a second distance that is greater then the first distance.
16. The contact arrangement of claim 15, wherein said first pair of associated ground

terminals are interconnected together.

17. The contact arrangement of claim 16, wherein said first pair of associated ground terminals are interconnected to each other between said contact and tail portions thereof.
18. The contact arrangement of claim 15, wherein said housing includes a plurality of terminal-receiving passages, and said first pair of differential signal terminals are received within two of the terminal-receiving passages and are separated from each other by an intervening, empty terminal-receiving passage.
19. The contact arrangement of claim 15, wherein said the terminals further define a second differential signal channel that includes a second pair of differential signal terminals and a second pair of associated ground terminals disposed in said first and second rows of said housing, the second pair of associated ground terminals being spaced apart from each other by said first distance, and said second pair of differential signal terminals being spaced apart from each other by said second distance.
20. The contact arrangement of claim 19, wherein said second pair of differential signal terminals are disposed in said second row of said housing and said second pair of associated ground terminals are disposed in said first row of said housing..
21. An electrical connector comprising:
 - a housing which holds signal contacts and ground contacts that are arranged in at least two rows, each of the rows including at least a pair of differential signal contacts lying adjacent each other, and at least a pair of said ground contacts, wherein each said pair of differential signal contacts in one of said rows is opposed to a respective pair of ground contacts in another of said rows to form a signal transmission channel, the signal transmission channels being arranged consecutively along the rows in an alternating inverted sequence such that, within each said row, said pair of adjacent said signal contacts of one said signal transmission channel is spaced apart within said row from a pair of said ground contacts of a different said signal transmission channel, said ground contact pairs of each of said signal transmission channels being interconnected together

to cooperatively define a common ground path associated with said pair of differential signal terminals of said signal transmission channel.

22. The electrical connector as recited in claim 21, wherein, for each of said signal transmission channels, said pair of differential signal terminals are spaced apart from each other widthwise a first distance and said two rows of terminals are spaced apart from each other a second distance, the first distance is greater than said second distance.
23. The electrical connector as recited in claim 21, wherein imaginary lines drawn through vertices of said pair of said differential signal terminals and either of said pair of associated ground contacts in any of said signal transmission channels form an imaginary triangular pattern.
24. The electrical connector as recited in claim 23, wherein the triangular shaped pattern for consecutive said signal transmission channels are inverted with respect to said triangular shaped pattern for a previous said signal transmission channel.